



(12) **United States Patent**  
**Arbas**

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(54) **SYSTEM AND METHOD TO DETECT  
ALERTNESS OF MACHINE OPERATOR**

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(58) **Field of Classification Search**

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See application file for complete search history.

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(56) **References Cited**

U.S. PATENT DOCUMENTS

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US 2015/0265201 A1 Sep. 24, 2015

2002/0171551 A1\* 11/2002 Eshelman ..... G06Q 50/22  
340/573.1  
2015/0199010 A1\* 7/2015 Coleman ..... A61B 5/0006  
345/156

OTHER PUBLICATIONS

NeuroSky, "MindWave Mobile: MyndPlay Bundle", <http://store.neurosky.com/products/mindwave-mobile>, retrieved from the Internet on Mar. 17, 2015, 4 pages.

\* cited by examiner

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(57) **ABSTRACT**

A system and method relate to receiving, by a processing device, at least one stream of data captured by at least one sensor monitoring a human subject, wherein the at least one stream of data comprises sensor measurements, comparing the sensor measurements to at least one model of a mental state to estimate the mental state of the human subject, determining whether to trigger an alarm based on the estimated mental state, and in response to determining to trigger the alarm, generating an instruction to trigger the alarm.

**19 Claims, 6 Drawing Sheets**

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